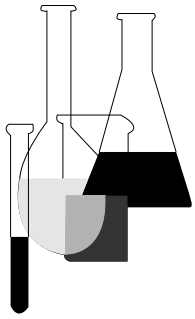
United States
Environmental Protection
Agency

Prevention, Pesticides
and Toxic Substances
(7101)

EPA 712–C–96–267
February 1996

Occupational and Residential Exposure Test Guidelines

OPPTS 875.2100 Foliar Dislodgeable Residue Dissipation



INTRODUCTION

This guideline is one of a series of test guidelines that have been developed by the Office of Prevention, Pesticides and Toxic Substances, United States Environmental Protection Agency for use in the testing of pesticides and toxic substances, and the development of test data that must be submitted to the Agency for review under Federal regulations.

The Office of Prevention, Pesticides and Toxic Substances (OPPTS) has developed this guideline through a process of harmonization that blended the testing guidance and requirements that existed in the Office of Pollution Prevention and Toxics (OPPT) and appeared in Title 40, Chapter I, Subchapter R of the Code of Federal Regulations (CFR), the Office of Pesticide Programs (OPP) which appeared in publications of the National Technical Information Service (NTIS) and the guidelines published by the Organization for Economic Cooperation and Development (OECD).

The purpose of harmonizing these guidelines into a single set of OPPTS guidelines is to minimize variations among the testing procedures that must be performed to meet the data requirements of the U. S. Environmental Protection Agency under the Toxic Substances Control Act (15 U.S.C. 2601) and the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136, *et seq.*).

This guideline, along with the others in Series 875.2000 through 875.2900, is being substantially revised for publication in 1997. However, the current guidelines are still official. Before initiating any studies for post-application exposure registrants should contact EPA's Occupational and Residential Exposure Branch (within the Office of Pesticide Programs) at 703–305–6094.

Final Guideline Release: This guideline is available from the U.S. Government Printing Office, Washington, DC 20402 on *The Federal Bulletin Board*. By modem dial 202–512–1387, telnet and ftp: fedbbs.access.gpo.gov (IP 162.140.64.19), internet: http://fedbbs.access.gpo.gov, or call 202–512–0132 for disks or paper copies. This guideline is also available electronically in ASCII and PDF (portable document format) from the EPA Public Access Gopher (gopher.epa.gov) under the heading ''Environmental Test Methods and Guidelines.''

OPPTS 875.2100 Foliar dislodgeable residue dissipation.

(a) **Scope**—(1) **Applicability.** This guideline is intended to meet testing requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136, *et seq.*).

(2) **Background.** The source material used in developing this harmonized OPPTS test guideline is OPP guideline 132. This guideline should be used with OPPTS 875.2000 and 875.2900.

(b) **Purpose.** Requirements of 40 CFR 158.390 described in this section are confined to the measurements of pesticide residues which are deposited on and remain on surfaces after pesticide application. These surfaces are limited to those that can be touched or disturbed by people, and from which residues can be dislodged during the performance of various tasks and subsequently deposited on human skin and clothing or inhaled.

(c) **Test standards—**(1) **Test substance.** A typical end-use product should be used for this study.

(2) **Sites for conduct of tests.** Since climate strongly influences the dissipation of pesticide residues, the applicant should perform dissipation study at a site representative of the climatic conditions expected in the intended use areas. The Agency will provide guidance on the choice of site upon request.

(3) **Substitutions for sites.** In certain cases, data from one site (when available) may be substituted for data from another site when surface characteristics are generally similar or nearly identical (e.g., orange and grapefruit orchard applications). For those cases, available residue data should demonstrate that dissipation rates at the two sites do not differ significantly for similar use patterns.

(4) **Method of application.** The test substance should be applied by application methods recommended for the end-use product. Application of the test substance to the site, area, or objects should be at the least dilution and highest rate permitted for that end-use product.

(5) **Timing of application.** The test substance should be applied at the time of year or season that would normally be recommended to achieve satisfactory pest control by the product.

(6) **Meteorological conditions.** Daily meteorological conditions at or near the site of application should be recorded as part of the data in this study. Such data would include, as appropriate, temperature, wind speed, daily rainfall, humidity, and similar information.

(7) **Standards for sample collection—**(i) **Duplicate samples.** Duplicate foliar samples should be collected periodically for the development of dissipation curves. The first samples should be taken as soon as the spray has dried or the dust has settled. The intervals at the start of sampling

should be relatively short and may increase with time. For example, samples taken as soon as the spray has dried or the dust has settled, and at 1, 2, 5, 7, 14, 21, 28, and 35 days after pesticide application would probably be appropriate for some pesticides. Comparable control or baseline samples should be collected immediately before the pesticide application. If analyses of samples reveal dislodgeable residues above the reentry level, sampling and analyses should continue until a level at or below the reentry level is reached.

(ii) **Additional standards for soil samples.** (A) Whenever the applied pesticide deposits on, is incorporated into, or diffuses into soil at the site of application and whenever tasks at the treated site will involve exposure of workers to large amounts of soil, duplicate soil samples for pesticide residue analysis should be collected from the soil surface or from not more than the upper 1 cm of soil in the test plot.

(B) The fine material should be isolated from the soil samples without grinding to give all of the material having particle sizes of 147 μm or less without particles larger than 147 μm. The fine material will be extracted for residue analysis.

(iii) **Sample storage.** Samples and sample extracts may be stored for later analysis only if fortified controls are included to permit evaluation of possible residue deterioration during storage. Such samples should be stored under conditions which will minimize deterioration.

(8) **Procedures for chemical extraction and analysis.** The dislodgeable pesticide residues should be extracted from the foliar material and soil, isolated from interfering materials by suitable cleanup procedures, and quantified.

(d) **Reporting of test results.** In addition to meeting the general reporting requirements of 40 CFR 158.390, the test report should also meet the following requirements: For surface residues such as foliar residues, the analytical results should be expressed in terms of milligrams or micrograms of residues per square centimeter of surface (e.g. leaf surface). It will be necessary to estimate the surface area of extracted leaves that are too small for a standard leaf punch to be used.

(e) **Evaluation and use of data.** Data obtained from this study are for the development of dissipation curves which can be used in the calculation of reentry intervals according to the approaches described in OPPTS 875.2900.

(f) **References.** The following references should be consulted for additional background material on this test guideline.

(1) Gunther, F.A. et al. Establishing dislodgeable pesticide residues on leaf surfaces. *Bulletin of Environmental Contaminant Toxicology*

9:243–249 (1973). This reference includes discussions of sampling procedures and a description of leaf punches used in sample collection.

(2) Iwata, Y. et al. Worker reentry into pesticide treated crops. I. Procedure for the determination of dislodgeable residues on foliage. *Bulletin of Environmental Contaminant Toxicology* 18:649–655 (1977). This is a recent modification of the procedure referenced in paragraph (f)(1) of this guideline for quantification of dislodgeable residues and increases the applicability of the method. Although additional research may uncover other methods more predictive of the respiratory and dermal dose variable, at present these techniques are the most suitable for foliar residues.